AMENDMENTS TO THE CLAIMS

1-5. **(Cancelled).**

6. **(New)** A gas engine electric power generating system comprising:

an electric power generating apparatus including an electric power generator coupled to a pilot fuel oil ignition type gas engine having at least one cylinder and a cylinder pressure detector;

a combustion diagnosis apparatus for diagnosing a combustion condition within the gas engine in response to a cylinder pressure detector signal;

a combustion controller that adjusts a fuel mixture comprising recovered methane gas having a methane concentration of 30-50% and ventilated methane gas having a methane concentration of 0.3-0.7 % in the gas engine in response to a combustion condition signal from said combustion diagnosis apparatus; and

a gas injection device that introduces the fuel mixture into the cylinder while mixing the recovered methane gas and the ventilated methane gas to define a lean methane/air mixture having a methane concentration of 3-5% and having an air excess ratio not less than 2, such that the gas engine operates to produce electric power.

7. **(New)** A gas engine electric power generating system in accordance with claim 6 wherein said combustion controller adjusts the fuel mixture by comparing a maximum pressure ratio defined as P_p/P_o against predetermined pressure ratios each corresponding to at least one of a plurality of diagnoses, where P_p is a maximum cylinder pressure in a cycle and P_o is a compression pressure for at least one predetermined crank angle in a compression stroke, to facilitate preventing engine knock and engine misfire.

8. **(New)** A gas engine electric power generating system in accordance with claim 6 further comprising a coal mine that supplies the recovered methane gas and the ventilated methane gas.

9. **(New)** A gas engine electric power generating system, said system comprising:

an electric power generator coupled to a pilot fuel oil ignition type gas engine having at least one cylinder and a cylinder pressure detector;

means for diagnosing a combustion condition within the gas engine in response to a signal from the cylinder pressure detector;

means for adjusting a fuel mixture of recovered methane gas having a methane concentration of 30-50% and ventilated methane gas having a methane concentration of 0.3-0.7% in the gas engine in response to a combustion condition signal from said means for diagnosing a combustion condition; and

means for introducing the fuel mixture into the cylinder while mixing the recovered methane gas and the ventilated methane gas to define a lean methane/air mixture having a methane concentration of 3-5% and having an air excess ratio not less than 2.

10. **(New)** A gas engine electric power generating system in accordance with claim 9 wherein said means for adjusting the fuel mixture further comprises comparing a maximum pressure ratio defined as P_p/P_o against predetermined pressure ratios each corresponding to at least one of a plurality of diagnoses, where P_p is a maximum cylinder pressure in a cycle and P_o is a compression pressure for at least one predetermined crank angle in a compression stroke, and facilitates preventing engine knock and engine misfire.

11. **(New)** A gas engine electric power generating system in accordance with claim 9 further comprising a coal mine that supplies the recovered methane gas and the ventilated methane gas.

12. **(New)** A method for reducing carbon dioxide emissions using emissions credit trading, said method comprising:

supplying recovered methane gas having a methane concentration of 30-50% and ventilated methane gas having a methane concentration of 0.3%-0.7% from a coal mine;

generating electric power with an apparatus including an electric power generator coupled to a pilot fuel oil ignition type gas engine having at least one cylinder and a cylinder pressure detector;

diagnosing a combustion condition within the gas engine in response to a cylinder pressure detector signal using a combustion diagnosis apparatus;

adjusting a fuel mixture comprising the recovered methane gas and the ventilated methane gas in the gas engine, using a combustion controller, in response to a combustion condition signal from the combustion diagnosis apparatus;

introducing the fuel mixture into the cylinder using a gas injection device while mixing the recovered methane gas and the ventilated methane gas to define a lean methane/air mixture having a methane concentration of 3-5% and having an air excess ratio not less than 2, such that the gas engine operates to produce electric power; and

registering a carbon dioxide emissions credit for carbon dioxide produced from the generator, defined as a difference in a greenhouse effect index between greenhouse producing gases, on a credit market for trading, wherein the greenhouse producing gases are coal mine methane gas released to the atmosphere and combusted methane gas released to the atmosphere as carbon dioxide.

13. **(New)** A method for reducing carbon dioxide emissions using emissions credit trading in accordance with claim 12, wherein the coal mine methane gas released to the atmosphere has a first greenhouse effect index and the combusted methane gas released to the atmosphere has a second greenhouse effect index.